

## REMARKS

### *Status of the Application*

Claims 1-10 are pending and stand finally rejected. Claim 1 has been amended to correct the minor informality noted by the Examiner. No new matter has been added to the present application. In view of the foregoing amendment and the following remarks, Applicants respectfully request reconsideration of the present application and a Notice of Allowance.

### *Claim Objection*

Claim 1 has been amended to correct the informality noted by the Examiner in the present Official Action. Accordingly, Applicants respectfully request withdrawal of the objection to claim 1.

### *Claim Rejections – 35 U.S.C. § 102(b)*

Claims 1-4 and 6-10 stand finally rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Pat. No. 5,761,040 (Iwasa). Applicants respectfully submit that the Examiner's rejection is overcome because claims 1 and 7 include features that are not disclosed by Iwasa. For example, claim 1 recites:

A semiconductor device comprising:

- a plurality of semiconductor elements arranged on a substrate; and
- a main current electrode ... , wherein

each of said plurality of semiconductor elements and said main current electrode are electrically connected, and *wherein said main current electrode bridges from one end of the substrate to an opposite end of the substrate* and is arranged immediately above one of said plurality of semiconductor elements or a wiring pattern connected to the one of said plurality of semiconductor elements. (Emphasis added.)

Claim 7 similarly recites “wherein said metal member bridges from one end of the substrate to an opposite end of the substrate.” Applicants respectfully traverse the rejection

because Iwasa fails to teach a main current electrode that “*bridges from one end of the substrate to an opposite end of the substrate*” as claimed. Applicants note that Iwasa discloses a prior art modular semiconductor device. The device has at least one pair of main electrodes that are arranged so as to be overlapping. (Col. 2, ll. 50-66). The Examiner points to main electrodes M1 and M2 as anticipating the main current electrode 13 “because the length M1 or M2 from one end-curved portion to the other end-curved portion is bigger than one end of the element HS to an opposite end of the element HS.” (Official Action, p. 3; *see* Iwasa at col. 1, l. 61 – col. 2, l. 47; Figs. 15-16).

However, and as can be seen in Iwasa, the main electrodes M1 and M2 *do not bridge from one end of a substrate to the opposite end of the substrate*. As can also be seen in Figs. 15 and/or 16, the main electrodes M1 and M2 instead *extend laterally* over each end of the element HS, but do not *bridge* from one end of the element HS to the other. In other words, the main electrodes M1 and M2 are not attached to each end of the element HS, thereby forming a bridge from one end of the element HS to the other.

In addition, Applicants respectfully note that the main electrodes M1 and M2 of Iwasa serve a different purpose than the claimed main current electrode 13. The purpose of both main electrodes M1 and M2 is to serve as a direct path for a main current to the switching element of a power switching device. (Col. 1, ll. 16-17.) Each of the main electrodes M1 and M2 is arranged in a parallel geometry to lessen the amount of generated self-inductance. (Col. 2, ll. 16-25.) The lateral extension of the main electrodes M1 and M2 is to precisely maintain the parallel arrangement and to absorb mechanical stresses. (See col. 2, 10-17.) Because the main electrodes M1 and M2 serve as a direct connection to the switching element, they do not have additional connections to other components, and do not bridge from one end of the element HS to the other.

In contrast, the claimed main current electrode 13 straddles the circuit components of a semiconductor device, such as a power module, and is connected to the source of the semiconductor elements 7 on a substrate by way of wire bonding 14. (Application, as filed, at p. 13, l. 13 – p. 14, l. 23; Fig. 6.) Thus, the main current electrode 13 reduces the size of the

semiconductor device by carrying current to the semiconductor elements 7 as a bridge that is vertically apart from the surface of the substrate.

Because Iwasa does not recite all the limitations of claims 1 and 7 as amended, Applicants respectfully submit that Iwasa does not anticipate claim 1 or 7. As claims 2-4 and 6 ultimately depend from claim 1, and as claims 8-10 ultimately depend from claim 7, Applicants respectfully submit that claims 2, 4, 6 and 8-10 are also not anticipated by Iwasa for the reasons explained above.

***Claim Rejections – 35 U.S.C. § 103(a)***

Claim 5 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Iwasa and U.S. Pat. No. 5,646,445 (Masumoto), and further in view of U.S. Pat. No. 5,086,337 (Noro). Applicants note that the Examiner rejected claim 5 “as being unpatentable over [Iwasa] and [Masumoto] as applied to claim 4 above, and further in view of [Noro].” (Emphasis added.) Respectfully, the Applicants point out that Masumoto was not used in the Examiner’s 35 U.S.C. § 102(b) rejection of claim 4. Nevertheless, Applicants address Masumoto herein solely to expedite examination of the present application.

Applicants respectfully traverse the Examiner’s rejection of claim 5. As discussed above concerning newly amended claim 1, Iwasa fails to disclose a main current electrode that “*bridges from one end of the substrate to an opposite end of the substrate*” as claimed.

Applicants respectfully submit that both Masumoto and Noro fail to cure the deficiencies of Iwasa, as both references are devoid of teachings that would suggest the subject matter of claim 5 in the context of a semiconductor device having a main current electrode that “*bridges from one end of the substrate to an opposite end of the substrate,*” as is the case in independent claim 1, from which claim 5 ultimately depends. Accordingly, Applicants respectfully submit that claim 5 patentably defines over Iwasa in view of Masumoto and/or Noro, taken alone or in combination.

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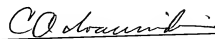
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37 CFR § 1.116

**CONCLUSION**

In view of the foregoing amendments and remarks, Applicants respectfully submit that the pending claims patentably define over the prior art. Accordingly, a Notice of Allowance are respectfully requested. In the event that the Examiner believes that the present application is not allowable for any reason, the Examiner is encouraged to contact the undersigned attorney to discuss resolution of any remaining issues.

Respectfully submitted,

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